

# Assessment Of Vaginal Infections In Pregnant Women

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## Abstract

**Background:** Vaginitis is inflammation of the vagina. Vulvovaginitis, is an inflammation of the vagina and vulva. Infection can result in discharge, itching and pain. The present study was conducted to assess vaginal infections in pregnant women.

**Materials & Methods:** 76 pregnant women reporting to Obstetric & Gynaecology department for vaginal infection. A detailed obstetric examination was carried out as well. Per speculum examination was carried out and the vaginal mucosa was inspected for the presence of erythema, lesions, and discharge. Vaginal and cervical swabs samples were obtained and sent to microbiology laboratory.

**Results:** There were 10 in first trimester, 26 in second and 40 in third trimester. The difference was significant ( $P < 0.05$ ). Clue cells in wet mount was positive in 8 and negative in 68, Nugent's score  $>7$  was positive in 12 and negative in 64. Amsel's criteria was positive in 14 and negative in 62. The difference was significant ( $P < 0.05$ ). Gram's stain was positive in 5 and negative in 71 and culture was positive in 11 and negative in 65. The difference was significant ( $P < 0.05$ ).

**Conclusion:** Bacterial vaginosis was seen in 14 and candidiasis in 11 cases. Diagnosis of vaginal infections was done using both clinical and microbiological methods.

**Key words:** Bacterial vaginosis, microbiological methods, vaginal infections

## INTRODUCTION

Microbial infections of the vagina among pregnant women are serious problems. Vaginitis is inflammation of the vagina. Vulvovaginitis, is an inflammation of the vagina and vulva. Infection can result in discharge, itching and pain.<sup>1</sup> The three main causes of vaginitis are infections by bacteria (bacterial vaginosis), yeast (vaginal candidiasis), or the protozoan that causes trichomoniasis. A woman may have multiple infections at any one time. If there is discomfort in the vulvovaginal area, women can request their health care providers evaluate for the presence of an infection.<sup>2</sup>

Several obstetric complications such as pre-term labor, amniotic fluid infection, premature rupture of the fetal membranes, and low birth weight of the neonate can be attributed to microbial infections of pregnancy, leading to high perinatal mortality. However, proper identification and treatment will reduce the risk of preterm birth and its consequences.<sup>3</sup> In a developing nation like India, where very less amount of GDP is spent on healthcare facilities, the burden of diseases such as preterm delivery, low birth weight, PROM imposes might be reduced by early identification of risk factors associated and treating them pre-handed.<sup>4</sup>

Symptoms may be such as presence of infection, irritation or itching of the genital area inflammation of the labia majora, labia minora, or perineal area, vaginal discharge, foul vaginal odor, pain/irritation with sexual intercourse.<sup>5</sup> Vaginal conditions could be diagnosed using known Amsel's clinical criteria including vaginal discharge appearance, pH measurement, whiff test, and clue cell on microscopy.<sup>6</sup> The present study was conducted to assess vaginal infections in pregnant women.

## MATERIALS & METHODS

The present study comprised of 76 pregnant women reporting to Obstetric & Gynaecology department for vaginal infection. All gave their written consent for the participation in the study. Pregnant women in labor, history of leaking per vaginam/absent membranes, history of antimicrobial treatment in preceding 2 weeks, medical complications of pregnancy such as anemia, hypertension, diabetes, etc. HIV-positive women, women with organic lesions, women who did not give consent were excluded.

Data such as name, age etc. was recorded. Variables such as previous history of abortions, menstrual date, and clinical signs and symptoms were recorded. A detailed obstetric examination was carried out as well. Per speculum examination was carried out and the vaginal mucosa was inspected for the presence of erythema, lesions, and discharge. Characteristics of discharge (thick/thin, scanty/copious, foul smelling/nonfoul smelling, colour of the discharge, adherent/nonadherent to vaginal walls) were noted. Vaginal and cervical swabs samples were obtained and sent to microbiology laboratory. All samples were processed for possible isolation and identification of pathogenic microorganisms. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

## RESULTS

**Table I** Distribution based on trimester

Trimester	Number	P value
First trimester (up to 13 weeks)	10	0.05
Second trimester (13.1–28 weeks)	26	
Third trimester (28.1 weeks plus)	40	

Table I shows that there were 10 in first trimester, 26 in second and 40 in third trimester. The difference was significant (P< 0.05).

**Table II** Assessment of bacterial vaginosis

Bacterial vaginosis	Variables	Number	P value
Clue cells in wet mount	Positive	8	0.01
	Negative	68	
Nugent's score >7	Positive	12	0.02
	Negative	64	
Amsel's criteria	Positive	14	0.04
	Negative	62	

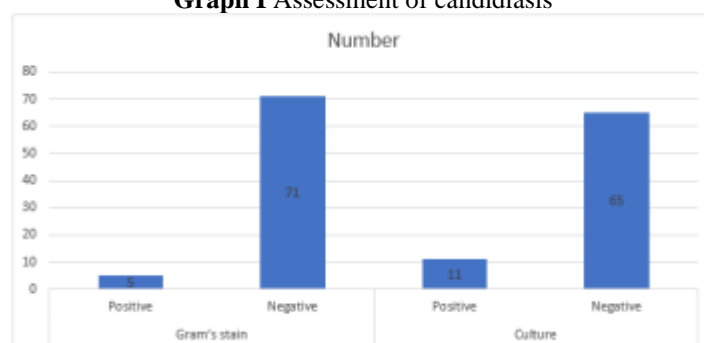
Table II shows that clue cells in wet mount was positive in 8 and negative in 68, Nugent's score >7 was positive in 12 and negative in 64. Amsel's criteria was positive in 14 and negative in 62. The difference was significant (P< 0.05).

**Table III** Assessment of candidiasis

Candidiasis	Variables	Number	P value
Gram's stain	Positive	5	0.01
	Negative	71	
Culture	Positive	11	0.03
	Negative	65	

Table III, graph I shows that gram's stain was positive in 5 and negative in 71 and culture was positive in 11 and negative in 65. The difference was significant (P< 0.05).

**Graph I** Assessment of candidiasis



## DISCUSSION

Vaginitis in the child-bearing age group has been well-recognized as a major public health concern due to its high recurrence.<sup>7</sup> Pregnant women are particularly the group at risk owing to the high infection rates stemming from immunological, hormonal changes, and from greater vaginal glycogen stores.<sup>8</sup> The vagina could be infected by a variety of pathogens including bacteria, fungi, viruses, and parasites.<sup>9</sup> Bacterial vaginosis (BV) is the most frequent vaginal infection, characterized by the replacement of Lactobacillus species of normal vaginal flora by the excessive growth of a mixture of microorganisms including Gardnerella vaginalis, Bacteroides species, genital mycoplasma, and fastidious anaerobic bacteria. A woman may have vaginal itching or burning and may notice a discharge. The discharge may be

excessive in amounts or abnormal in color.<sup>10</sup> The present study was conducted to assess vaginal infections in pregnant women.

We found that there were 10 in first trimester, 26 in second and 40 in third trimester. Bamniya et al<sup>11</sup> studied the prevalence of vaginal infections in pregnant women and its implications in pregnancy. Overall 200 cases were enrolled, 100 symptomatic and 100 asymptomatic women. Identification of the aerobic culture isolates was performed using 41 standard biochemical tests. Afterward, colonies grown on SDA agar were subjected to growth on CHROM agar for speciation of *Candida*. Diagnosis of BV was made using Amsel's criteria and Gram's stain Nugent's scoring system. Results: The prevalence of vaginal infections in the present study was 22.5%. Incidence of BV was found to be 9%. Incidence of candidiasis was found to be 13.5%. The analysis in the present study also showed that there were greater odds of vaginal infections among women with clinical symptoms (37%) as compared to asymptomatic women (8%).

We found that clue cells in wet mount was positive in 8 and negative in 68, Nugent's score >7 was positive in 12 and negative in 64. Amsel's criteria was positive in 14 and negative in 62. Mishra et al<sup>12</sup> studied 460 pregnant women with suspicion of symptomatic and asymptomatic vaginal infections. Vaginal and cervical swabs samples were obtained from each subject and processed immediately for possible isolation and identification of pathogenic microorganisms. Out of 460 patients, 328 (71.3%) found to be positive for vaginal infections. Age group 17- 25 years had 12% of cases, 26- 34 years had 65%, 35- 42 years had 18% and >42 years had 5% of cases. Common microorganisms were *Chlamydia trachomatis* (32%), *Candida albicans* (27%), *Mycoplasma hominis* (12%), *Gardnerella vaginalis* (10%), *Staphylococcus aureus* (6%), *Trichomonas vaginalis* (5%), *Neisseria gonorrhoea* (3%), *E. coli* (2%) and *Vibrio Mobiluncus* (3%). Conclusion: Vaginal infections are quite common in pregnant women

We found that gram's stain was positive in 5 and negative in 71 and culture was positive in 11 and negative in 65. Konadu et al<sup>13</sup> determined the prevalence of vulvovaginal candidiasis (VVC), bacterial vaginosis (BV) and trichomoniasis (TV) in pregnant women. The overall prevalence of at least one vaginal infection was 56.4%. The prevalence of vulvovaginal candidiasis, bacterial vaginosis and trichomoniasis were 36.5, 30.9 and 1.4% respectively. Women with more than four previous pregnancies and those in the third trimester of pregnancy were associated with a lower risk of bacterial vaginosis. Douching and antibiotic use were neither associated with VVC or BV.

Yalew et al<sup>14</sup> determined the prevalence of bacterial vaginosis (BV) and aerobic vaginitis (AV) and their associated risk factors among pregnant women. The possible risk factors for AV and BV in pregnant women were investigated. The prevalence rates of BV and AV were 20.1% (85/422) and 8.1% (34/422), respectively. BV was more common in symptomatic vs. asymptomatic people ( $P < 0.001$ ), and in second trimester vs. first trimester samples ( $P = 0.042$ ). However, AV was more common in secondary school vs. primary and those who were unable to read and write ( $P = 0.021$ ) and in housewife women vs. employee ( $P = 0.013$ ). A total of 44 bacterial strains were isolated from AV cases, of which the coagulase-negative staphylococci (CoNS) (38.6%) and *Staphylococcus aureus* (29.5%) were the most predominant bacteria, respectively. The highest resistance rate was observed against penicillin (100.0%) in staphylococci, while 86.7% of them were sensitive to ciprofloxacin. The resistance rate of Enterobacteriaceae ranged from 0.0% for ciprofloxacin and chloramphenicol to 100.0% against amoxicillin/clavulanate. The prevalence of BV was higher than AV in pregnant women. This higher prevalence of BV suggests that measures should be taken to reduce the undesired consequences related to BV in the pregnancy.

The limitation the study is small sample size.

## CONCLUSION

Authors found that bacterial vaginosis was seen in 14 and candidiasis in 11 cases. Diagnosis of vaginal infections was done using both clinical and microbiological methods.

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